



# Climate Change Primer

This is a brief backgrounder on the global climate change debate. The Global Climate Coalition is updating it as developments warrant. If you need any additional information that is not referenced here, please call Frank Maisano at 202/628-3622.

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## Quick Overview

The United Nations Framework Convention on Climate Change is an agreement concluded in 1992, signed by President Bush at the Rio Earth Summit and later approved by the U.S. Senate. This agreement asks all developed countries to make their best efforts to reduce greenhouse gas emissions to 1990 levels by 2000. This "aim" was not legally binding. The Kyoto Protocol, which concluded in December, will require that emissions be reduced to specified levels after the turn of the century. If ratified, it will be legally binding on the United States.

At their meeting in Kyoto, negotiators agreed to seek reductions in the average national emissions of industrialized countries of approximately 5 percent below 1990 levels between 2008 and 2012. The United States target is 7% below the 1990 level; the European Union's pledge is 8% and Japan's is 6%. None of 134 developing countries -- including China, India, Mexico, Brazil and South Korea -- is required to set any limits. Negotiators will decide later on the details that will dictate how the Protocol will work and how to deal with non-compliance.

For the protocol to take effect, at least 55 countries representing at least 55% of the 1990 carbon dioxide emissions of the 38 industrialized nations would have to sign the treaty by having their leaders and then ratify it. The signing period opened on March 16, 1998 and will close one year later on March 15, 1999.

## Where The Six 'Selected' Major Greenhouse Gases Come From

Greenhouse Gas	Man-made Causes	Natural Causes
Carbon dioxide (CO <sub>2</sub> )	Combustion of coal and natural gas for the generation of electricity; petroleum products such as vehicle fuels	Volcanoes, trees, forest fires, vegetation, oceans
Methane	Production, transportation of coal and natural gas; decomposition of waste in landfills	Decomposition, animal waste, wetlands, natural gas
Nitrous oxide (N <sub>2</sub> O)	Fertilizers; industrial combustion of fossil fuel	Moist soils
Hydrofluorocarbons (HFCs)	Aerosol additives	
Perfluorocarbons (PFCs)	Aluminum production	
Sulfur Hexafluoride (SF <sub>6</sub> )	Semiconductor manufacturing processes	

Source: Peabody Institute

The protocol covers six major greenhouse gases (see table) and is supposed to take into account changes in emissions resulting from changes in forest and land use patterns. You can find the actual protocol, readable with Adobe Acrobat's Reader software at [www.unfccc.de/fccc/docs/cop3/protocol/pdf](http://www.unfccc.de/fccc/docs/cop3/protocol/pdf)

Greenhouse gases are controversial in part because they are such a small part of the total atmosphere, most of them having both natural and manmade sources. The most prevalent greenhouse gas is water vapor. (see charts)

## Greenhouse Gas Emissions in the United States

While the United States has 5 percent of the world's population, it produces 22 percent of the world's economic output. Many data and computer models suggest that it emits approximately one-quarter of the world's greenhouse gases.

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## **President Clinton's Climate Change Program: "We cannot wait until the treaty is negotiated and ratified to Act."**

- ① Enact tax cuts and make R&D investments worth up to \$6.3 billion from 1998-2002 to encourage energy efficiency and use of cleaner energy sources.
- ② Offer credits to companies that reduce emissions.
- ③ Create a market system for reducing emissions wherever they can be achieved inexpensively, in the U.S. and abroad.
- ④ Reinvent how the U.S. government buys and uses energy. (Clinton pledged to have 20,000 solar energy systems on the rooftops of federal buildings by 2010.)
- ⑤ Unleash competition in the electric industry and utilize heat "squandered" in the generation of electricity.

You can find the President's October 22, 1997 speech on climate change through the White House's online archive: [www.whitehouse.gov/WH/html/library.html](http://www.whitehouse.gov/WH/html/library.html)

### **The Debatable Role of an Emissions Trading System**

The protocol outlines how a program could permit a country or corporation could sell credits to a country or a corporation over its limit. There would be incentives to foster the lowest-cost compliance strategies first. A related trading system works for SO<sub>2</sub> permits in the U.S. but many authorities contend that carbon-based emissions would be far more difficult and expensive to coordinate and control throughout the world. Unlike SO<sub>2</sub>, carbon dioxide is a natural element, not a pollutant, and there is no technology to remove it from the combustion process. Contact: David Harrison, 617/621-0444.

[www.nera.com](http://www.nera.com)

### **Achieving Kyoto: The Hurdles Ahead**

Harvey Drucker, Associate Director of Energy and Environmental Technology at the Argonne National Laboratory, is skeptical at best about Americans reducing their energy consumption --- and the resulting CO<sub>2</sub> emissions --- enough to achieve the Kyoto targets without dramatic energy price increases and/or very large carbon tax. Achieving the Kyoto targets, Dr. Drucker said, probably would also require Americans to start "worrying again" about energy, not only about the price they are going to be paying in the near future but about its availability and reliability, as the nation did during the 1970s energy crises. Contact: Dr. Harvey Drucker, 630/252-3804.

Here are illustrative changes needed – starting in 1998 – just to give the U.S. a reasonable chance to meet its greenhouse gas reduction targets by 2008-2012, according to Arthur Rypinski, an economist in Integrated Analysis and Forecasting at the U.S. Energy Information Administration [arthur.rypinski@eia.doe.gov](mailto:arthur.rypinski@eia.doe.gov):

- Increase the average energy efficiency of commercial office buildings and homes by at least 3% per year;
- Increase the average fuel efficiency of all U.S. vehicles --- currently in the low 20s (miles per gallon) -- by 3% per year with no increase in miles traveled, resulting in the downsizing of vehicles
- Stop burning coal to generate electricity.

### **Sense of the U.S. Senate Thus Far**

The U.S. Senate voted 95-0 in 1997 on a resolution by Sens. Robert Byrd, D-WV, and Chuck Hagel, R-NE, to set a criteria for U.S. participation in any Protocol agreed to in Kyoto. For the U.S. to participate, the Senate called for meaningful participation by Developing Countries and adequate disclosure of the potential economic impact on the United States. The State Department agrees that the Kyoto Protocol does not meet the Senate's and its own criteria. Contact: Deb Fiddelke, 202/224-4224; [hagel.senate.gov](mailto:hagel.senate.gov)

### **What's Being Said About the Kyoto Protocol**

*From the Winter 1998 issue of Resources, by Resources For The Future, Washington, DC*

"A protocol that is both workable in practice and capable of being ratified by the Senate must come to grips with three basic questions: First, does it represent a sound framework for attaining long-term global emissions-reduction goals ... Second, how costly are the targets and timetables? ... Third, what measures would the United States deploy in order to achieve the goals?" Contact: Mike Tebo, 202/328-5019; [www.rff.org](http://www.rff.org)

### **Upcoming UN Framework Convention Meetings**

- November 2-13, 1998 in Buenos Aires, Argentina: Fourth Session of the Conference of the Parties (COP4)  
For related workshops, the UN's climate change web site at: [www.unfccc.de/fccc/meetings/file11.htm](http://www.unfccc.de/fccc/meetings/file11.htm)

### **Other Background Resources**

Global Climate Coalition: 202/628-3622; [www.globalclimate.org](http://www.globalclimate.org)

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